

IN THE CLAIMS

The status of each claim is listed below.

Claims 1-14: Canceled.

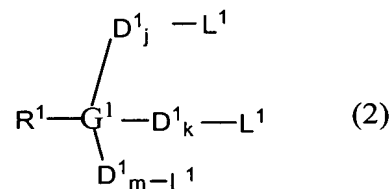
15. (New) A catalyst for trimerizing ethylene, comprising:

(i) an organic metal complex having a neutral multidentate ligand having a tripod structure represented by the following formula (1):



wherein

A is a neutral tridentate ligand having a tripod structure represented by the following formula (2) or formula (3):



wherein

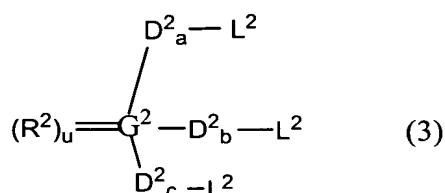
j, k and m independently represent an integer of 0 to 6,

each D^1 independently represents a divalent hydrocarbon group which may have a substituent,

each L^1 independently represents a nitrogen atom or a substituent containing an element of group 16 of the periodic table,

G^1 represents a carbon atom, and

R^1 represents a hydrogen atom, an alkyl group having 1 to 10 carbon atoms which may have a substituent, or an aryl group having 6 to 10 carbon atoms which may have a substituent,



wherein

a, b and c independently represent an integer of 0 to 6,

u represents an integer of 0 or 1,

each D^2 independently represents a divalent hydrocarbon group which may have a substituent,

each L^2 independently represents a substituent containing a nitrogen atom or an element of group 16 of the periodic table,

G^2 represents a nitrogen or phosphorus atom when u is 0 or a phosphorus atom when u is 1,

R^2 represents an oxygen or sulfur atom,

M is a transition metal atom of group 3 to group 10 of the periodic table,

each Q is independently selected from the group consisting of a hydrogen atom, a halogen atom, a straight chain or branched alkyl group having 1 to 10 carbon atoms which may have a substituent, and an aryl group having 6 to 10 carbon atoms which may have a substituent, and

n is an integer equal to a formal oxidation state of M,

and

(ii) an alkylaluminoxane.

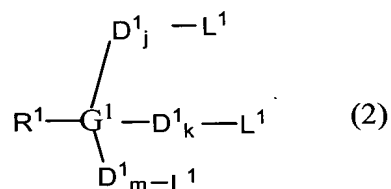
16. (New) A catalyst for trimerizing ethylene, comprising:

(i) an organic metal complex having a neutral multidentate ligand having a tripod structure represented by the following formula (1):



wherein

A is a neutral tridentate ligand having a tripod structure represented by the following formula (2) or formula (3):



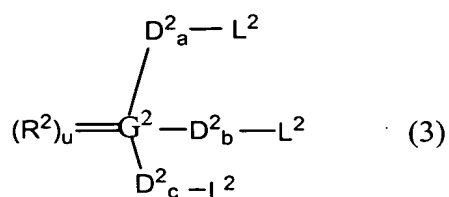
wherein

j, k and m independently represent an integer of 0 to 6,

each D^1 independently represents a divalent hydrocarbon group which may have a substituent,

each L^1 independently represents a substituent containing a nitrogen atom or an element of group 16 of the periodic table,

G^1 represents a carbon atom, and R^1 represents a hydrogen atom, an alkyl group having 1 to 10 carbon atoms which may have a substituent, or an aryl group having 6 to 10 carbon atoms which may have a substituent,



wherein

a, b and c independently represent an integer of 0 to 6,

u represents an integer of 0 or 1,

each D^2 independently represents a divalent hydrocarbon group which may have a substituent,

each L^2 independently represents a substituent containing a nitrogen atom or an element of group 16 of the periodic table,

G^2 represents a nitrogen or phosphorus atom when u is 0 or a phosphorus atom when u is 1, and

R^2 represents an oxygen or sulfur atom,

M is a transition metal atom of group 3 to group 10 of the periodic table,

each Q is independently selected from the group consisting of a hydrogen atom, a halogen atom, a straight chain or branched alkyl group having 1 to 10 carbon atoms which may have a substituent, and an aryl group having 6 to 10 carbon atoms which may have a substituent, and

n is an integer equal to a formal oxidation state of M, and

(ii) an alkylaluminumoxane, and

(iii) a halogenated inorganic compound.

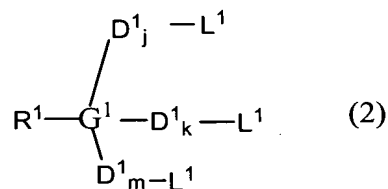
17. (New) A catalyst for trimerizing ethylene, comprising:

(i) an organic metal complex having a neutral multidentate ligand having a tripod structure represented by the following formula (1):



wherein

A is a neutral tridentate ligand having a tripod structure represented by the following formula (2) or formula (3):



wherein

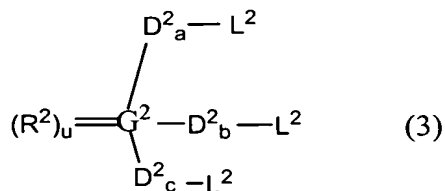
j, k and m independently represent an integer of 0 to 6,

each D^1 independently represents a divalent hydrocarbon group which may have a substituent,

each L^1 independently represents a substituent containing a nitrogen atom or an element of group 16 of the periodic table,

G^1 represents a carbon atom, and

R^1 represents a hydrogen atom, an alkyl group having 1 to 10 carbon atoms which may have a substituent, or an aryl group having 6 to 10 carbon atoms which may have a substituent,



wherein

a, b and c independently represent an integer of 0 to 6,

u represents an integer of 0 or 1,

each D^2 independently represents a divalent hydrocarbon group which may have a substituent,

each L^2 independently represents a substituent containing a nitrogen atom or an element of group 16 of the periodic table,

G^2 represents a nitrogen or phosphorus atom when u is 0, or a phosphorus atom when u is 1, and

R^2 represents an oxygen or sulfur atom,

M is a transition metal atom of group 3 to group 10 of the periodic table,

each Q is independently selected from the group consisting of a hydrogen atom, a halogen atom, a straight chain or branched alkyl group having 1 to 10 carbon atoms which may have a substituent, and an aryl group having 6 to 10 carbon atoms which may have a substituent, and

n is an integer equal to a formal oxidation state of M,

(ii) an alkylaluminumoxane,

(iii) a halogenated inorganic compound, and

(iv) an alkyl group-containing compound represented by the following formula (4):



wherein

p and q are numbers satisfying the formulae: $0 < p \leq 3$ and $0 \leq q < 3$, provided that $(p + q)$ equals to the valence of E and $1 \leq (p + q) \leq 3$,

E represents an atom, other than a hydrogen atom, of group 1, 2, 3, 11, 12 or 13 of the periodic table,

each R independently represents an alkyl group having 1 to 10 carbon atoms, and
each J independently represents a hydrogen atom, an alkoxide group having 1 to 10 carbon atoms, an aryloxy group having 6 to 10 carbon atoms, an aryl group having 6 to 10 carbon atoms or a halogen atom.

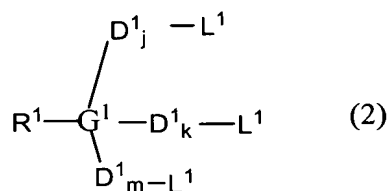
18. (New) A catalyst for trimerizing ethylene, comprising:

(i) an organic metal complex having a neutral multidentate ligand having a tripod structure represented by the following formula (1):



wherein

A is a neutral tridentate ligand having a tripod structure represented by the following formula (2) or formula (3):



wherein

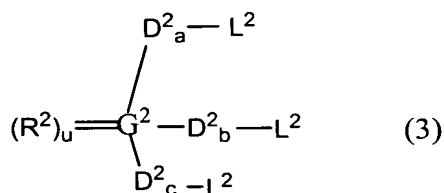
j, k and m independently represent an integer of 0 to 6,

each D^1 independently represents a divalent hydrocarbon group which may have a substituent,

each L^1 independently represents a substituent containing a nitrogen atom or an element of group 16 of the periodic table,

G^1 represents a carbon atom, and

R^1 represents a hydrogen atom, an alkyl group having 1 to 10 carbon atoms which may have a substituent, or an aryl group having 6 to 10 carbon atoms which may have a substituent,



wherein

a, b and c independently represent an integer of 0 to 6,

u represents an integer of 0 or 1,

each D^2 independently represents a divalent hydrocarbon group which may have a substituent,

each L^2 independently represents a substituent containing a nitrogen atom or an element of group 16 of the periodic table,

G^2 represents a nitrogen or phosphorus atom when u is 0, or a phosphorus atom when u is 1, and

R^2 represents an oxygen or sulfur atom,

M is a transition metal atom of group 3 to group 10 of the periodic table,

each Q is independently selected from the group consisting of a hydrogen atom, a halogen atom, a straight chain or branched alkyl group having 1 to 10 carbon atoms which may have a substituent, and an aryl group having 6 to 10 carbon atoms which may have a substituent, and

n is an integer equal to a formal oxidation state of M,

(ii) an alkylaluminumoxane, and

(iii) an alkyl group-containing compound represented by the following formula (4):



wherein

p and q are numbers satisfying the formulae: $0 < p \leq 3$ and $0 \leq q < 3$, provided that $(p + q)$ equals to the valence of E and $1 \leq (p + q) \leq 3$,

E represents an atom, other than a hydrogen atom, of group 1, 2, 3, 11, 12 or 13 of the periodic table,

each R independently represents an alkyl group having 1 to 10 carbon atoms, and

each J independently represents a hydrogen atom, an alkoxide group having 1 to 10 carbon atoms, an aryloxy group having 6 to 10 carbon atoms, an aryl group having 6 to 10 carbon atoms or a halogen atom.

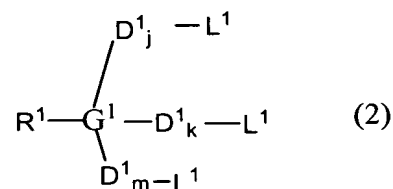
19. (New) A catalyst for trimerizing ethylene, comprising:

(i) an organic metal complex having a neutral multidentate ligand having a tripod structure represented by the following formula (1):



wherein

A is a neutral tridentate ligand having a tripod structure represented by the following formula (2) or formula (3):



wherein

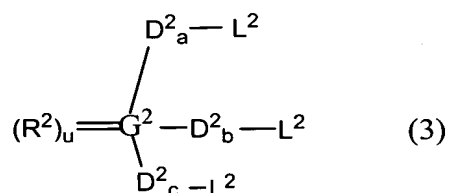
j, k and m independently represent an integer of 0 to 6,

each D^1 independently represents a divalent hydrocarbon group which may have a substituent,

each L^1 independently represents a substituent containing a nitrogen atom or an element of group 16 of the periodic table,

G^1 represents a carbon atom, and

R^1 represents a hydrogen atom, an alkyl group having 1 to 10 carbon atoms which may have a substituent, or an aryl group having 6 to 10 carbon atoms which may have a substituent,



wherein

a, b and c independently represent an integer of 0 to 6,

u represents an integer of 0 or 1,

each D^2 independently represents a divalent hydrocarbon group which may have a substituent,

each L^2 independently represents a substituent containing a nitrogen atom or an element of group 16 of the periodic table,

G^2 represents a nitrogen or phosphorus atom when u is 0 or a phosphorus atom when u is 1, and

R^2 represents an oxygen or sulfur atom,

M is a transition metal atom of group 3 to group 10 of the periodic table,

each Q is independently selected from the group consisting of a hydrogen atom, a halogen atom, a straight chain or branched alkyl group having 1 to 10 carbon atoms which may have a substituent, and an aryl group having 6 to 10 carbon atoms which may have a substituent, and

n is an integer equal to a formal oxidation state of M,

(ii) an alkylaluminumoxane, and

(iii) at least one compound selected from the group consisting of an amine compound and an amide compound.

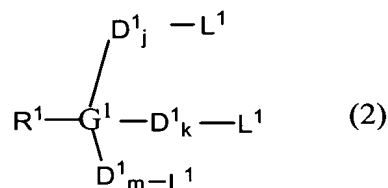
20. (New) A catalyst for trimerizing ethylene, comprising:

(i) an organic metal complex having a neutral multidentate ligand having a tripod structure represented by the following formula (1):



wherein

A is a neutral tridentate ligand having a tripod structure represented by the following formula (2) or formula (3):



wherein

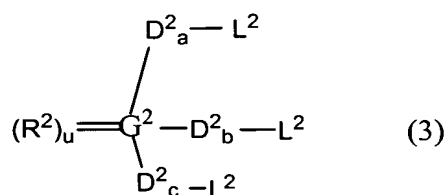
j, k and m independently represent an integer of 0 to 6,

each D^1 independently represents a divalent hydrocarbon group which may have a substituent,

each L^1 independently represents a substituent containing a nitrogen atom or an element of group 16 of the periodic table,

G^1 represents a carbon atom, and

R^1 represents a hydrogen atom, an alkyl group having 1 to 10 carbon atoms which may have a substituent, or an aryl group having 6 to 10 carbon atoms which may have a substituent,



wherein

a, b and c independently represent an integer of 0 to 6,

u represents an integer of 0 or 1,

each D^2 independently represents a divalent hydrocarbon group which may have a substituent,

each L^2 independently represents a substituent containing a nitrogen atom or an element of group 16 of the periodic table,

G^2 represents a nitrogen or phosphorus atom when u is 0 or a phosphorus atom when u is 1, and

R^2 represents an oxygen or sulfur atom,

M is a transition metal atom of group 3 to group 10 of the periodic table,

each Q is independently selected from the group consisting of a hydrogen atom, a halogen atom, a straight chain or branched alkyl group having 1 to 10 carbon atoms which

may have a substituent, and an aryl group having 6 to 10 carbon atoms which may have a substituent, and

n is an integer equal to a formal oxidation state of M,

(ii) an alkylaluminumoxane,

(iii) at least one compound selected from the group consisting of an amine compound and an amide compound, and

(iv) an alkyl group-containing compound represented by the following formula (4):



wherein

p and q are numbers satisfying the formulae: $0 < p \leq 3$ and $0 \leq q < 3$, provided that $(p + q)$ equals to the valence of E and $1 \leq (p + q) \leq 3$,

E represents an atom, other than a hydrogen atom, of group 1, 2, 3, 11, 12 or 13 of the periodic table,

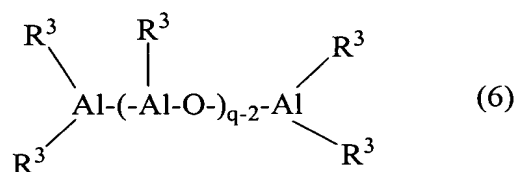
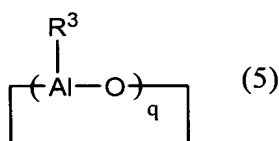
each R independently represents an alkyl group having 1 to 10 carbon atoms, and

each J independently represents a hydrogen atom, an alkoxide group having 1 to 10 carbon atoms, an aryloxy group having 6 to 10 carbon atoms, an aryl group having 6 to 10 carbon atoms or a halogen atom.

21. (New) A catalyst according to any one of Claims 15 to 20, wherein the organic metal complex is an organic chromium complex in which M is a chromium atom.

22. (New) A catalyst according to any one of Claims 15 to 20, wherein A is facially coordinated to a transition metal atom M of group 3 to group 10 of the periodic table in the organic metal complex represented by formula (1).

23. (New) A catalyst for according to any one of Claims 15 to 20, wherein the alkylaluminumoxane is at least one compound selected from the group consisting of compounds represented by the following formulae (5) and (6):

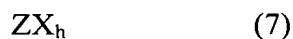


wherein

each R^3 independently represents a hydrogen atom or a hydrocarbon group having 1 to 20 carbon atoms, and

q is an integer of 3 to 60.

24. (New) A catalyst according to Claim 16 or 17, wherein the halogenated inorganic compound is represented by the following formula (7):



wherein

Z is an atom of group 1, 2, 13, 14 or 15 of the periodic table,

X represents a halogen atom, and

h denotes an integer to neutralize the formal oxidation state of Z .

25. (New) A catalyst according to Claim 19 or 20, wherein each of the amine compound and the amide compound has at least one nitrogen atom having three substituents other than hydrogen atoms, and has 3 to 30 carbon atoms.

26. (New) A process for trimerizing ethylene, comprising trimerizing ethylene in the presence of a catalyst as claimed in any one of Claims 15 to 20.

SUPPORT FOR THE AMENDMENTS

Newly-added Claims 15-26 are supported by the specification at pages 2-35 and original Claims 1-14. No new matter is believed to have been added by the amendment submitted above.